

# SINGAPORE maritimeweek<sup>®</sup> 2024



**The energy transition is on the way but 'steep trajectory' ahead**

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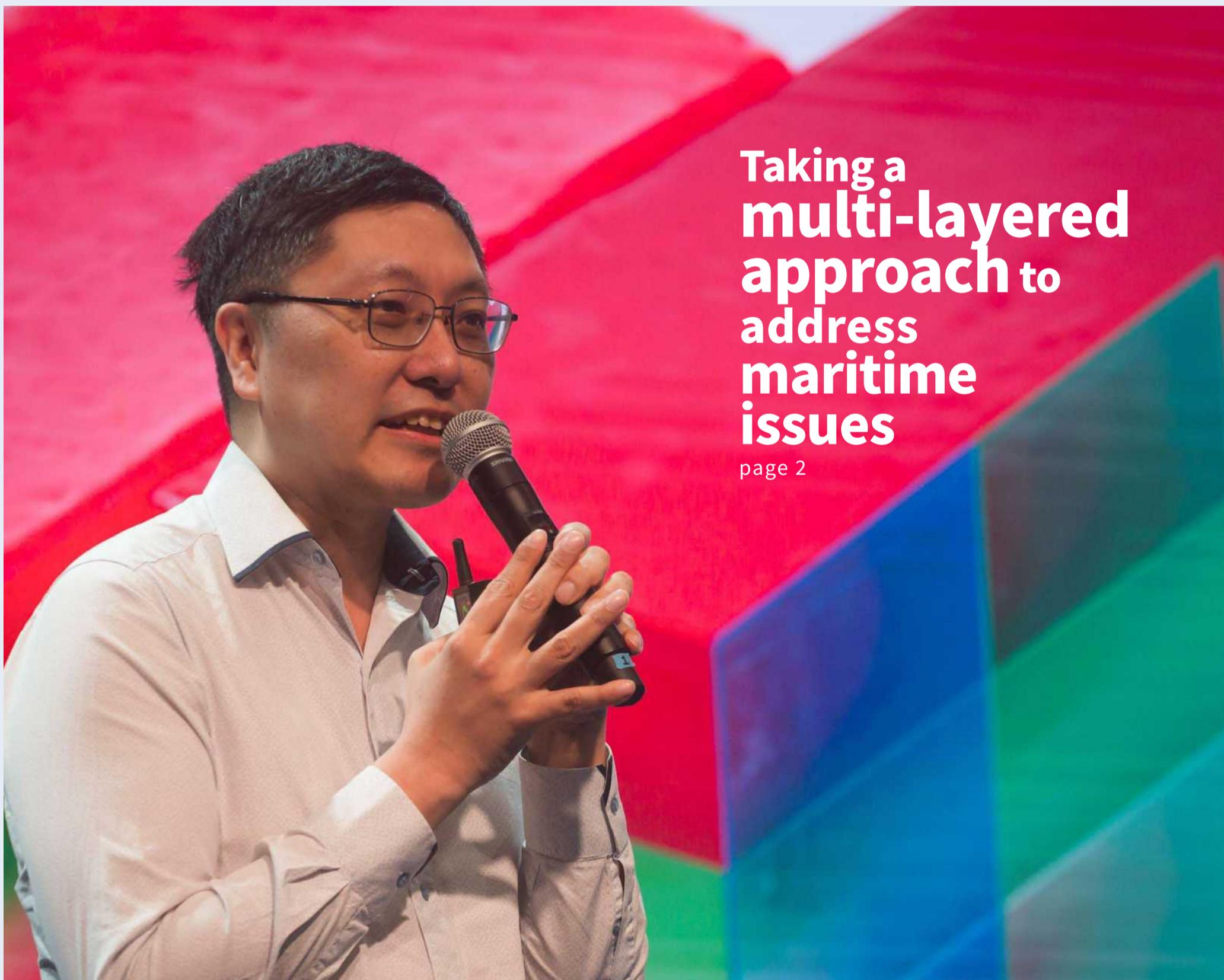
**Data standards are critical to ensuring progress**

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# Surface, subsea, and beyond: Maritime sector charting a path to 'multi-domain capability'



**“Why a nine-layer cake?... This snack is made of many different layers stacked together...MPA, together with others, has identified six critical domains that we will work on.”**

**Mr Teo Eng Dih**  
Chief Executive of the  
Maritime and Port Authority of Singapore

Together with our partners, we are (working on) dashboards and real-time systems so we can address cyber threats in real-time,” said Mr Teo.

## TOWARDS GREENER SHIPPING

Singapore is exploring various strategies to make the green transition, and the maritime industry is no exception.

The world’s first ship-to-containership methanol bunkering was completed in Singapore in 2023. The country is developing national standards on methanol as well as ammonia bunkering.

“We will launch a new project in Singapore in the second half of the year to look at some of the technical standards relating to hydrogen,” Mr Teo added. “We don’t think it will be as commercially viable in the near term, but the work has to start now.”

From 2030, all new harbour craft operating in the Port of Singapore must be fully electric, be capable of running on pure biodiesel (B100), or be compatible with net-zero fuels.

MPA has also been seeking proposals for electric harbour craft designs, and is working with ST Engineering AirX to trial “Wing-in-Ground” vessels that can travel just above the surface of the water. They are meant to be faster and more fuel-efficient.

“We hope this will support the delivery of passengers and emergency-related personnel, when needed, to islands in different parts of the world,” said Mr Teo.

Through all of these initiatives, collaboration is key, and it is in this spirit that Singapore has established green and digital shipping corridor partnerships with Rotterdam, Los Angeles, Long Beach, Tianjin, as well as ports in Japan and Australia.

“MPA, together with our tripartite partners, will work very hard on this voyage with you, and all our international associations and organisations, (to) address these key challenges of digitalisation and decarbonisation,” added Mr Teo. ■

*Mr Teo Eng Dih, MPA’s Chief Executive, shared how the statutory board is working closely with partners to tackle the twin challenges of digitalisation and decarbonisation.*



**Toh Wen Li**  
wenli@nutgraf.com.sg

**W**hat do the maritime sector and Nyonya *kueh lapis* have in common? More than you might think – for one, they are both made up of different layers.

Mr Teo Eng Dih, Chief Executive of the Maritime and Port Authority of Singapore (MPA), used the colourful local dessert as a metaphor as he homed in on six newly-identified “critical domains” for the industry.

They are space, air, surface, subsea, sustainability, and cybersecurity.

“The shipping sector is moving towards multi-domain capability,” said Mr Teo during his presentation, Towards a Smarter & Greener Future of Shipping, on Day 3 of the Singapore Maritime Week.

“Why a nine-layer cake?...This snack is made of many different layers stacked together...MPA, together with others, has identified six critical domains that we will work on. We’ve left (room for another) three, as there might be emerging domains along the way.”

The maritime sector has been exploring new initiatives under each domain, noted Mr Teo, who

gave an overview of these efforts during his 40-minute speech.

From subsea robots to satellites, drones to dashboards, there is much that Singapore is doing to strengthen the maritime sector as it forges ahead with digitalisation and decarbonisation.

In the “surface” domain, ships can benefit from MPA’s upcoming Artificial Intelligence-enabled Next Generation Vessel Traffic Management System, a Just-In-Time Planning and Coordination Platform, as well as a digital bunkering initiative that began in 2023.

“Digital bunkering reduces paperwork, (and) reduces the risk to seafarers,” Mr Teo noted. “We expect this to save about 40,000 man days a year. We have (approved) about four (digital bunkering) solutions so far, and hope more can come on board.”

A drone traffic management system – which could allow for more efficient delivery of supplies to seafarers – has also been developed for use in Singapore, he added.

Strides have also been made in cybersecurity, ranging from a platform for the testing of cyber vulnerabilities and solutions, to a cybersecurity maturity questionnaire by MPA and the Singapore Shipping Association.

“We are building what we call the Maritime Cyber Assurance and Operations Centre...



The world has made good progress on the green transition, but it needs to move faster, said Mr Tim Gould, Chief Energy Economist of the International Energy Agency.

## What will it take to achieve the energy transition?

*The world needs to do more to accelerate decarbonisation, and governments need to step up.*



**Puah Rui Xian**  
ruixian@nutgraf.com.sg

Southeast Asia lags behind some other developed regions when it comes to deployment of renewable energy, the Chief Energy Economist of the International Energy Agency (IEA) said.

“For the moment, ASEAN is not a huge player in (the renewables) market,” said Mr Tim Gould. The

region is far outstripped by China, the European Union, the United States, and India.

Speaking on Wednesday (April 17) during his address on the second day of the Accelerating Digitalisation and Decarbonisation Conference, Mr Gould went on to note that the IEA is trying to accelerate the green transition in the region by working with countries in Southeast Asia to overcome policy and financing stumbling blocks.

Illustrating his point, a Memorandum of Understanding was signed later that day between the Maritime and Port Authority of Singapore and

the IEA, signalling greater collaboration on the maritime energy transition.

But renewables could soon hit a roadblock, with structural issues surfacing worldwide.

“Grids are not in place everywhere they need to be to allow renewables to expand at the pace we need to see,” he said. Companies in big industries like shipping are also often hesitant to be first-movers in the push for decarbonisation.

While there is cause for optimism, the overarching question he poses to the audience is: “What will it take?”

### A NARROW WAY THROUGH

When it was released in 2021 by the IEA, the first Net Zero by 2050 roadmap showed that several innovative technologies key to the energy transition were still in the prototype phase. But almost three years on, there is reason to be cautiously optimistic.

“Some of the answers we were looking for have come through,” said Mr Gould. Sodium-ion batteries and offshore wind turbines are already beginning to be commercialised, for example.

Still, it is not enough. The world needs to get on a “much steeper trajectory” for emissions reductions to keep global warming to 1.5 degrees Celsius – the internationally-agreed upon figure that marks the tipping point for the climate.

Big industries, like shipping, tend to want reassurance that there will be demand or infrastructure in place before they move to decarbonise, he said. To the IEA, this “speaks to the need for governments”.

Governments play a critical role as harmonisers, coordinating efforts across sectors and supply chains. This does not mean that they impose technological solutions on companies – rather, they must “have a vision” to link the supply chain, said Mr Gould. ■

## Time to walk the talk

*It's 'go time' for the IMO.*

Months of intense discussion and debate led to the landmark revision of the International Maritime Organization’s (IMO) greenhouse gas (GHG) emissions strategy in July 2023. The new strategy targets net-zero by or around 2050 – far more ambitious than its 2018 predecessor, which only sets out a 50 per cent reduction in GHG emissions from shipping by 2050 compared to 2008 levels.

But for Mr Arsenio Dominguez, Secretary-General of the IMO, that’s in the past.

“It’s time to stop patting ourselves on the back. (The strategy) is going to be a year old in a few months,” he said. “Focus on the actions to meet those ambitions.”

In his opening remarks on the second day of the Accelerating Digitalisation and Decarbonisation Conference, held on Day 3 of Singapore Maritime Week, Mr Dominguez –

who took office at the start of this year – was emphatic about the need for action. The time for talk is over, and he is ready to do what it takes to get shipping over the finish line.

**“I am ready to push you whenever I think you are not committed enough, not delivering enough. It is a challenge for both of us. You challenge me, and I’ll challenge you back.”**

Over the past few days, Mr Dominguez said that many people have spoken to him, asking him about what technology or fuel they should use in their bid to decarbonise.

And his reply has always been the same: “There is no silver bullet.”

Rather, the IMO is doing everything it can to lay the tracks for the maritime energy transition. This includes assessing the safety concerns associated with different alternative fuels, working out training requirements, and determining the cost of decarbonisation.

Crucially, the IMO “is not going to abandon anyone”.

“I know it is a competitive market, but we’re all in this together,” he said, urging countries that are further ahead in their decarbonisation journeys to uplift countries that are lagging behind.

“There are actions, experiences, that can be shared,” he said, imploring the audience to “use the IMO”.

“Bring your experience and expertise to the organisation, because we bring together 176 countries, plus intergovernmental and non-governmental organisations.” ■



With data standardisation, ships will be encouraged to experiment with new tech tools to boost efficiency, said Swire Shipping and Swire Bulk's Chief Sustainability and Energy Transition Officer Ms Susana Germino.

## Data harmony for digital and decarb symphony

*Common language needed to advance maritime push for efficiency.*



**Pearl Lee**  
pearl@nutgraf.com.sg

For all the talk of maritime's two most sought after Ds of digitalisation and decarbonisation, they would count for nought without a third D: data standardisation.

Currently, different digital tools collect data differently. Ships that want to try out a handful of promising technologies will need to manually input the data into these tools.

"So if you want to try four or five (technologies), the crew will have to repeat the (process) four or five times," said Ms Susana Germino, the Chief Sustainability and Energy Transition Officer of Swire Shipping and Swire Bulk.

This discourages experimentation and adoption, she added at the Singapore Maritime Week. As a result, there are few platforms for maritime players to share successful case studies.

"There's just not enough formal platforms (for ships) to share the savings that technologies have had in different types and sizes of vessels," she observed as part of a panel discussing how digitalisation enables decarbonisation on Wednesday.

Data needs to be harmonised so that more will use digital technologies. And with that, efficiency on ships will follow. For instance, digital twins and sensing technologies can help ships predict wind and ocean current patterns and work with, and not against them.

Such tools present potential for ships to be greener and more efficient. But now, there is a lack of momentum to standardise data collection, said speakers.

The industry needs "to communicate with a common language", added Mr Peter Schellenberger, Director and Founder of maritime consultancy Novamaxis.

But Mr Gavin Allwright, Secretary-General of the International Windship Association which promotes wind propulsion for commercial shipping, urged the industry to exercise caution and ensure that any data collected is of high quality.

"All of the digitalisation, Artificial Intelligence and machine learning, if there isn't good data going in – if you put bad data in – you will get bad results," he said.

"I would rather see us going slower, but certain that we are getting the right results... We are not just dropping fuels into an existing system. We've got to really integrate all the systems together."

Mr Schellenberger added that the industry must also be mindful that smaller operators are not being left out.

"Large companies have good infrastructure and people who are used to analysing (new technologies)... But I think a lot of companies are kind of overwhelmed. I think they are looking for use cases to show them that (digitalisation) can be done," he said. ■

## All hands on deck to overcome net-zero fuel transition challenges: panellists

*Ammonia is touted as the long-term fuel solution, but safety concerns and novel technology could hinder its widespread application.*

**Matthew Gan**

Ammonia is emerging as the key net-zero fuel of the future, but the maritime industry faces several challenges in its large-scale adoption.

A critical concern is safety. Ammonia poses safety risks because of the high volume of explosive engine combustions, and the gas' toxicity.

"Safety is the most crucial thing – both environmental and operator safety," said Mr Hiroki Kobayashi, Chief Executive Officer at heavy industries firm IHI Asia Pacific, at the Net-Zero Fuel Pathways Panel during the Accelerating Digitalisation and Decarbonisation Conference on Wednesday.

Given the focus on safety, a substantial proportion of resources should be spent on ensuring ammonia technology is safe, added Mr Nicolas Brabeck, Managing Director at energy provider MAN Energy Solutions Singapore.

What will help, noted Mr Kenneth Widell, Senior Project Manager (Smart Technology Hub) at marine and energy solutions provider Wartsila, is having stakeholders share information on safe ammonia usage.

Another challenge is training seafarers to use novel technology. But panellists agreed that it should not deter the industry from pursuing the widespread adoption of ammonia.

"All this is new to us, but we can start training early, collect feedback, and adjust accordingly," said Mr Leonardo Sonzio, Vice-President and Head of Fleet Management and Technology at global shipping company Maersk.

Stakeholders should also collaborate more, said Mr Robert van Nielen, Vice-President (Growth) at liquid storage logistics provider Advorio. "There are many things to set up – supply chains, logistics, safety protocols and training – but we need to transition. And if we want to make this change in time, we must work together," he said.

As moderator Mr Knut Orbeck-Nilssen, Chief Executive Officer (Maritime) at registrar and classification society DNV, put it in his closing remarks: "The fuel of the future, really, is collaboration." ■

# Nine companies clinch carbon accounting award

Charlene Wang

Nine companies were recognised for their efforts in monitoring their carbon emissions at the 3rd edition of the MaritimeSG LowCarbon50 Awards.

Announced on Wednesday at the Accelerating Digitalisation and Decarbonisation Conference, the annual award assesses carbon accounting efforts, which help companies keep track of their carbon footprint and set reduction targets. This mitigates their impact on the environment while reducing operational costs and improving risk management.

The award, which encourages maritime companies to increase their carbon awareness, is jointly organised by the Maritime and Port Authority of Singapore (MPA), Singapore Shipping Association, and United Nations Global Compact Network Singapore.

The nine awardees – five winners and four Honourable Mentions – were deemed to have done accurate carbon accounting using the Carbon Emissions Recording Tool and taken significant steps to decarbonise.

The winners are:

- Asiatic Lloyd Maritime LLP
- Executive Ship Management Pte Ltd
- Goodwood Ship Management Pte Ltd
- Hong Lam Marine Pte Ltd
- Synergy Marine Pte Ltd

The Honourable Mentions are:

- Metizoft Asia Pte Ltd
- Ocean Network Express (Singapore) Pte Ltd
- Peninsula Petroleum Far East Pte Ltd
- X-press Feeders / Sea Consortium Pte Ltd

To accelerate decarbonisation and digitalisation, MPA also inked Memorandums of Understanding with Eastern Pacific Shipping (EPS), the American Bureau of Shipping, and Lloyd's Register. Six of EPS' ammonia dual-fuel newbuilds will be flagged under the Singapore Registry of Ships upon delivery. The partnership will see joint capability and capacity-building on ammonia bunkering, seafarer training, and safety. ■



Mr Sergio Mujica, ISO Secretary-General, urged the audience to also be part of the standards-setting process.

## Setting the standard: making decarbonisation a reality

*International standards are the blueprint for green maritime efforts.*



Derek Wong  
derek@nutgraf.com.sg

In a climate of distrust, independent standards give the world something to believe in – and abide by. This is especially the case in the quest for sustainability, where fair measurements can expose greenwashing, said Mr Sergio Mujica, Secretary-General of the International Organization for Standardization (ISO).

“We need to differentiate between those who are doing things for real and those who are greenwashing,” said Mr Mujica, who was speaking at the fifth edition of the Distinguished Speaker Series organised by the Singapore Chamber of Maritime Arbitration (SCMA).

The ISO, an international organisation based in Geneva, uses a consensus-based approach with the input of 170 member countries to devise standards, he explained.

Since ISO's formation in 1947, its maritime technical committee has already developed more than 400 standards. They serve three purposes.

First, they give a framework to stakeholders like companies and regulators. For example, the guidelines specify how to define sustainability goals and management's role in achieving them. ISO also provides tools to assess, validate, and verify emissions.

Second, standards support public policy implementation. Governments and global bodies use ISO's maritime standards to draft regulations. For instance, as the International

Maritime Organization urges the use of alternative fuels, it has tapped ISO to develop standards for methanol.

“We do not compete with regulations or public policy,” said Mr Mujica. “We are trying to show the ‘how’ in the implementation of those regulations.”

Third, ISO plays a unifying role in interdisciplinary and transboundary issues like decarbonisation, working with other organisations to harmonise competing standards.

### SHAPE THE FUTURE

Mr Mujica concluded his speech by urging the audience to play a part in making these standards. “Standards will affect you, whether you like it or not,” he said. “You have an incredible opportunity...to participate in that conversation and shape the standards that will affect your future.”

Singapore has answered that call, by setting standards in clean maritime fuels, said Mr New Wei Siang at the same SCMA event. The nation conducted the world's first ship-to-ship methanol bunkering operation, and also pioneered the use of ammonia in a dual-fuelled ammonia-powered vessel.

“Based on what experts say, a multi-fuel transition is likely for the maritime industry,” said Mr New, Director (Decarbonisation and Net-Zero Pathways) at the Maritime and Port Authority of Singapore.

In this multi-fuel future, ISO and Singapore will play key roles in shaping and elevating the standards of the maritime sector. ■

# Giving the harbour craft sector a leg up in maritime's decarbonisation drive



**Jaime Niam**  
jaime@nutgraf.com.sg

*It is time to shine a larger spotlight on the often-overlooked harbour craft sector.*



Mr Desmond Ong, Chief Digital Officer of Jurong Port, talked about how the port's digital roadmap plays a big role in driving transformative efforts in the harbour craft sector.

The harbour craft sector is set to go almost fully electric by 2030, but more can be done to ensure it does not get left behind in the shadows of larger ocean-going ships.

One key issue is costs, said panellists at a discussion on transforming the harbour craft sector on Wednesday.

"We have to bring costs down. Financing can be a problem because new, sexy tech comes with a price," said Mr Michael Phoon, Executive Director of the Singapore Shipping Association, who moderated the panel.

While Ms Huang Sipei, Vice President of Sustainability at Institutional Banking Group, DBS Bank, acknowledged that financing new technology can be a challenge, she also said that the local environment is becoming increasingly hospitable, with DBS Bank being supportive of this green transition.

"Government schemes are helpful in sharing risks with banks and mitigating uncertainties," she said. For example, homegrown integrated

marine and offshore services provider Penguin International took up the Enterprise Financing Scheme-Green loan from DBS Bank and Enterprise Singapore to launch Singapore's first all-electric commuter ferry, Penguin Refresh, to Pulau Bukom island.

But it is not simply about mitigating the cost of new technology. Because the harbour craft sector is highly fragmented, streamlining and consolidating its business operations – both seaward and landward – is also imperative in lowering costs and enhancing efficiency, said Mr Danny Lien, President of the Singapore Association of Shippers & Services. As of July 2023, there were about 1,600 harbour crafts plying the waters of the Port of Singapore, though they are owned by many diverse groups of operators.

"We are trying to create a more consolidated effort with Pyxis...Instead of a single company in this industry trying to solve this, we must synergise our resources together," said Mr Tommy

Phun, Founder of Pyxis, a tech start-up that is helping coastal vessels switch from diesel to electricity.

"Going forward, a role that will be extremely important is that of the port orchestrator," added Mr Nakul Malhotra, Vice President (Emerging Opportunities Portfolio) of Wilhelmsen Group, referring to how the various activities and processes that happen within a port must be coordinated.

The multi-purpose Jurong Port is one good example. "People see (ports) as just infrastructure, but we have capabilities beyond just providing land," said Mr Desmond Ong, Chief Digital Officer of Jurong Port.

"The data (from the digital platforms and operating systems we built) allows us to streamline the supply side and become more optimal...and industry players can leverage these data points." ■

## Optimism in meeting harbour craft green targets



**Chen Jei Min**  
jeimin@nutgraf.com.sg

*Solving issues regarding costs, mindsets, and vessel infrastructure can help close existing gaps.*

Industry players are optimistic about meeting green targets set by the Maritime and Port Authority of Singapore (MPA) for harbour craft in domestic waters, said panellists at a discussion on harbour craft in Singapore.

From 2030, these vessels have to be either fully electric, capable of using pure biodiesel (B100), or be compatible with net-zero fuels such as hydrogen.

So far, the sector has been active in developing electrification technologies such as battery-electric propulsion systems, fuel-cell technology, and alternative fuels such as ammonia, said moderator Mr Ng Bing Rong, Director (Decarbonisation, Planning & Infrastructure) at MPA, during a panel on Technological Pathways for Harbour Craft on Wednesday.

For instance, Kuok Maritime Group would be able to cut carbon dioxide emissions "by at least 30 per cent to meet MPA's 2030 requirements by (having our vessels) go fully electric", said Mr Tan Thai Yong, its Managing Director of Strategic Projects and Technology.

Still, roadblocks remain, say experts on the second day of the Accelerating Digitalisation and Decarbonisation Conference. These include resistance to new technology, costs, and non-compatible vessels.

Adopting alternative fuels such as ammonia and hydrogen, for example, can be costly, said Mr Nikhil Garg, Managing Director of the APAC region at cleantech firm TECO 2030. "The cost of green technology can be very significant," he added.

Mr Svein Erik Oeistad, Head of Business Development and Sales at ammonia power

start-up Amogy Singapore, agreed, noting that developing alternative fuels comes with its own set of issues.

Getting maritime companies to take up new technology is another challenge, said Mr Koh Shu Yong, Director of Global Sustainability at the American Bureau of Shipping.

The reluctance may arise from the lack of vessels that are compatible with these tech pathways, said Mr Alex Mier, Director for Marine O&G Segment APAC at global manufacturing company Cummins.

"(Tackling these challenges) requires us to look into collaboration and partnerships with all the stakeholders within the value chain," urged Mr Koh. ■

# Green shipping corridors key to decarb goals

The decarbonisation journey is full of bumps. But green shipping corridors can help speed progress up.



**Angeline Cheong**  
angeline@nutgraf.com.sg

**R**oadblocks, from cost to technology to expertise, lie on the journey ahead as the maritime industry strives to reach its decarbonisation targets. But a crucial catalyst forward lies in green and digital shipping corridors.

This is especially because they create opportunities to trial projects, said Ms Heather Tomley, Managing Director of Planning and Environmental Affairs for the Port of Long Beach.

“Through the corridors, and smaller-scale-focused efforts, we can dig into some specific problems, try to come up with solutions and approaches, and test them with fewer risks,” she added during a panel on the second day of the Accelerating Digitalisation and Decarbonisation Conference.

These corridors allow organisations to start small and build on their successes. However, Ms Alisa Kreynes, Head of Ports

**“Through the corridors, and smaller-scale-focused efforts, we can dig into some specific problems, try to come up with solutions and approaches, and test them with fewer risks.”**

**Ms Heather Tomley**  
Managing Director of Planning and Environmental Affairs  
Port of Long Beach

and Shipping (Climate Solutions and Networks) at C40 Cities, reminded that successful pilot projects are not the main goal either.

“It is important to understand that while a lot of corridors are exploring the feasibility of certain solutions, they may not progress to actually having projects built and ships in the water,” she said on Wednesday. “That doesn’t mean they’re a failure.”

Even in such cases, transparency should still be practised, and stakeholders should continue to share their findings to help drive the global decarbonisation progress.

## THE COST OF CHANGE

Even with the advancement of technology, it is inevitable that the energy transition will require investment and come with a financial cost.

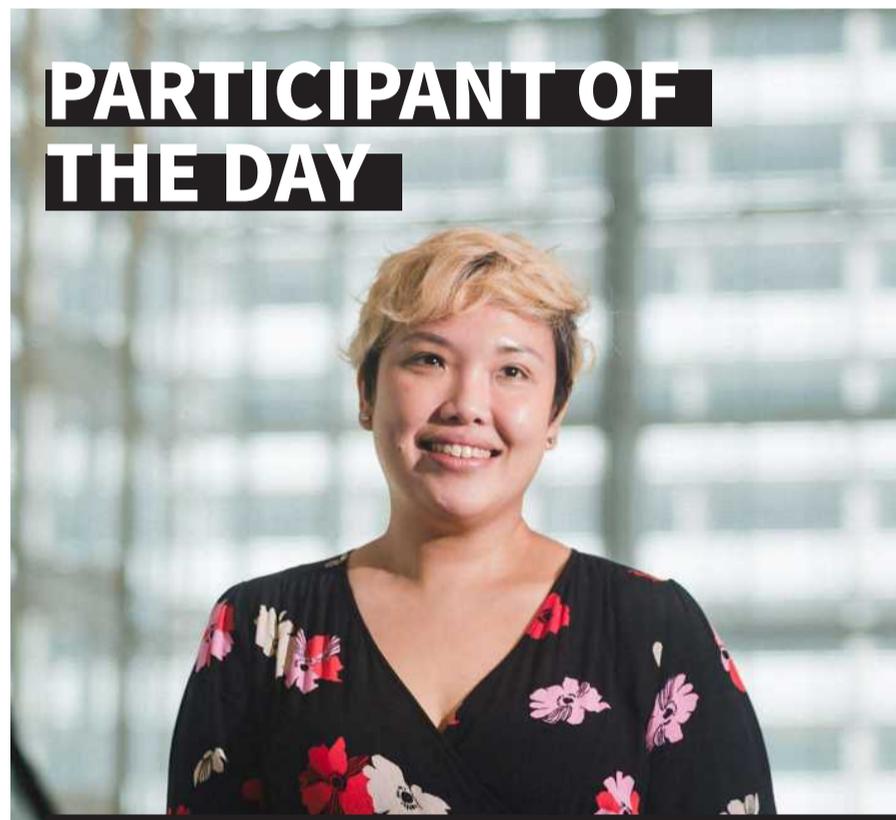
“But we have no other choice because the cost of inaction is even greater,” warned Ms Tomley.

When it comes to investment, the industry should “think out of the books... and not in how much we’re saving”, said Mr Francois-Xavier Accard, Managing Director at CMA CGM International Shipping Company. “We are investing in a change of mindset.”

The good news is that the number of corridors have doubled in the past year, according to the 2023 Annual Progress Report on Green Shipping Corridors by the Global Maritime Forum.

“We are on track to meet the net-zero goals that many of us have,” said Ms Saskia Mureau, Director Customer Digital at the Port of Rotterdam.

“There is real cause to be optimistic, but it also requires all of us to continuously drive and accelerate what we are doing and scale as soon as possible.” ■



## PARTICIPANT OF THE DAY

“I have really enjoyed my time at Singapore Maritime Week, building new connections and gaining a better understanding of the trends and new developments in the maritime industry. So far, the conferences and panel discussions have been eye-opening. The discussion on the use of sustainable fuel has particularly caught my attention, and this area of sustainability should definitely be explored further.”

**Mrs Cadence Wong,**  
Senior Manager (Industry Relations) at the NUS Centre for Future-ready Graduates, when asked about her experience at SMW thus far.

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# Tide Turners

In this four-part series, we speak to tech start-ups that are tech-ing maritime to the next level, from advancing the decarbonisation agenda to enhancing cybersecurity and maritime safety.

*MicroSec won the Special Mention in the PIER71™ Smart Port Challenge 2023 for its innovative, data-defending, and integrated cybersecurity platform. Victoria Lim speaks to Dr Vishram Mishra, its Chief Executive Officer, and Mr Andrew Woo Schill, Head of Growth, about the goals for their company in the maritime industry.*

**Q: Why do you think cybersecurity is an increasingly important topic for the maritime industry?**

**Mishra:** With a recent focus on decarbonisation and Artificial Intelligence solutions, digitalisation has become common in the industry. As a result, cyber risks have also increased commensurately. Compounding this risk further is the interconnectivity of these onboard digital solutions, as well as the integration of new devices with old devices and systems. Worse yet is the advent of Starlink. It has fully exposed vessels to the outside world, making them reachable from any point on Earth within satellite range and an internet connection. Such unauthorised access to vessels presents critical risks to global supply chains and national security.

**Q: How does your innovation fill the existing gaps in the industry?**

**Schill:** Cybersecurity expertise in the maritime industry is undersupplied. Vessels out at sea usually do not have a cybersecurity technician onboard. Therefore, cyber readiness demands an integrated approach to monitor various vulnerabilities without reliance on human intervention. Our innovation deploys machine learning for automatic threat mitigation while safeguarding systems from being compromised.

Existing cybersecurity solutions used today often focus on the upper layer of the network, such as the operation centre. Security may be provided for operational technology equipment, but only if they are internet- or ethernet-based. Consequently, everything else is vulnerable to cyber threats. Yet, vessels, as well as ports, are primarily made up of non-internet or non-ethernet networks. Our platform distinguishes itself by being able to monitor and secure heterogeneous environments that are made up of ethernet-, internet-, and non-internet-based networks, increasing the effectiveness of our solution.

Dr Vishram Mishra, Chief Executive Officer (second from left), and Mr Andrew Woo Schill, Head of Growth (first from right), with the MicroSec team at the Gartner Security & Risk Management Summit 2024 in Sydney.



**Q: How exactly does this integrated cybersecurity platform work? Any specific examples of when it has been used?**

**Mishra:** Prior to partnering with us, a major ship operator had outsourced its cybersecurity management to a third party. This resulted in a security system with extremely limited capabilities to visualise, detect, and respond to threats. Instead, our platform provided a robust solution for securing its in-vessel network and ensured continuous assessment for vulnerabilities and intrusions. This is particularly useful when ship operators decide to retrofit or add new digital solutions to their vessels, which could unknowingly create new attack vectors onboard.

**Q: How was the Smart Port Challenge and how did it help your company clarify your vision?**

**Mishra:** When we joined the Smart Port Challenge, we wanted to focus on creating a solution that improved cybersecurity readiness for ports and vessels based on IEC 62443, an industrial cybersecurity standard adopted globally.

Initially, we planned to adapt our existing cybersecurity solution developed for customers outside of the maritime industry. However, we later discovered that the maritime industry has unique constraints and cyber risks, making it more challenging to achieve a similar cybersecurity level. Simultaneously, a new security standard is being introduced – IACS UR E26 – for new builds, adding to the complexity of creating a reliable solution. Ultimately, we updated our approach according to new developments in vessels and ports to deliver a solution that prioritised the needs of ship operators and port operations.



**Dr Vishram Mishra,  
Chief Executive Officer**

**Mr Andrew Woo Schill,  
Head of Growth**

**Q: How has your technology changed since winning the Special Mention for this competition?**

**Schill:** We continue to believe that the importance of visibility from the edge cannot be underestimated. As a result, we have included new capabilities and features to our platform to give ship operators more flexibility in how they view and manage their networks. Some of these capabilities include assessing and monitoring multiple vessels and fleets continuously.

We are constantly improving our platform and sharing these improvements with our customers. Most recently, we completed a project last year in the UK for Maritime Autonomous Surface Ships (MASS), where we deployed quantum encryption which can withstand attacks from a quantum computer. ■

*The PIER71™ Smart Port Challenge is an annual innovation competition organised by PIER71™ to find the best breakthrough solutions from tech start-ups that will drive digital transformation and address key challenges faced by the maritime industry.*